

3.11 Exponent Laws p. 228

i) Product Rule (add the powers)

$$3^4 3^7 = 3^{4+7} = 3^{11}$$

ii) Quotient Rule (subtract the powers)

$$\frac{3^7}{3^4} = 3^{7-4} = 3^3$$

May 5-11:22 AM

Zero Exponent

$$3. \quad \frac{3^3}{3^3} = 3^{3-3} = 3^0 = \boxed{1}$$

$$5^0 = 1 \quad (-1)^0 = 1 \quad \left(\frac{1}{3}\right)^0 = 1$$

$$-7^0 = -\frac{1}{7} = -1$$

Dec 10-10:08 AM

4) Negative Exponents

$$\frac{4^3}{4^6} = 4^{3-6} = 4^{-3} = \frac{1}{4^3}$$

$$\frac{\cancel{4} \times \cancel{4} \times \cancel{4}}{\cancel{4} \times \cancel{4} \times \cancel{4} \times \cancel{4} \times \cancel{4} \times \cancel{4}} = \frac{1}{4^3}$$

Dec 10-10:12 AM

5. Power to a Power Rule (multiply the powers)

$$(3^4)^3 \Rightarrow 3^{4 \times 3} = 3^{12}$$

Power of a Product Rule

$$6.) (x^3 y)^2 = x^3 y^3$$

Dec 10-10:17 AM

7. Power of a Quotient Rule

$$\left(\frac{x^3}{y^2}\right)^4 = \frac{x^{12}}{y^8}$$

Evaluate

$$\left(\frac{2^3}{3^2}\right)^2 = \frac{2^6}{3^4} = \frac{4}{9}$$

Dec 10-10:21 AM

Exponent Laws Recap

$$(-4)^0 = 1$$

$$-4^0 = -1$$

$$(3^2)^3 = 3^{2 \times 3} = 3^6$$

$$2^3 \cdot 2^4 = 2^{3+4} = 2^7$$

$$\left(\frac{4}{7}\right)^{-2} \Rightarrow \left(\frac{7}{4}\right)^2 = \frac{7^2}{4^2} = \frac{49}{16}$$

$$2^{-3} 4^{-2}$$

$$= 2^{-3} (2^2)^{-2}$$

$$= 2^{-3} 2^{-4}$$

$$= 2^{-3+(-4)}$$

$$= 2^{-7}$$

$$= \frac{1}{2^7}$$

May 11-11:51 AM

Extras

$$(x^2 y)(x^{-3} y^2)$$

$$x^{(2 + -3)} y^{(1 + 2)}$$

$$x^{-1} y^3$$

$$= \frac{y^3}{x^1}$$

$$(x^2)^{-3}$$

$$x^{2 \times -3}$$

$$x^{-6}$$

$$\frac{1}{x^6}$$

Apr 2-1:34 PM

p.229 q. 2-4, 6-8 odds, 9-11,13,14, 16-18

1 a
b
c
d
e
f odds

Dec 10-10:23 AM